TEXTURING OF GLASS BY SiO2 FILM

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US4694116
US4675468
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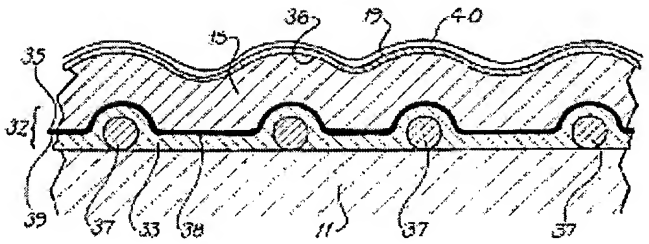
Abstract of **WO0028603**

A thin film silicon solar cell is formed on a glass substrate (11) which has a texturing layer (32) applied comprising an SiO2 film (33) mixed with texturing particles (34) having diameters in the order of 1-2 mu m whereby a textured surface (39) is formed. The SiO2 film is thinner than the average diameter of the texturing particles such that the quartz projects through the spin-on glass. The dielectric layer in this case provides a barrier layer function, however, a separate anti-reflection coating (38) may optionally be employed, having an upper surface (35) which is conformal with the textured surface (39). As illustrated in the Figure, a silicon film (15) is then formed over the textured surface (35) of the anti-reflection coating (38). The silicon film has a thickness preferably in the range of 0.5-2 mu m (i.e., of similar thickness to the dimensions of the texture features provided on the surface of the SiO2 layer). Although the silicon film produced by this method loosely conforms to the textured surface over which it is formed, the opposite surfaces of the film are substantially non-parallel, at least on a small scale such that light will generally traverse the silicon film at an angle to the silicon surface. More importantly, the light will more often than not strike the rear surface of the silicon film (upper surface, in the Figure) at a significant angle to the normal to the surface (36), such that for a significant number of incidences, total internal reflection will occur. The surface (36) may also be coated with a reflective material (40)



(such as a rear metal contact) to assist in reflecting internal light striking this surface.
